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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/047,809

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Ken Shoemaker

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EXAMINER

VO, LILIAN

ART UNIT

PAPER NUMBER

2195

MAIL DATE

DELIVERY MODE

12/21/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/047,809

Applicant(s)

SHOEMAKER ET AL.

Examiner

Lilian Vo

Art Unit

2195

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 September 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 2, 5 - 10, 12 - 16, 18 - 22 and 24 - 28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 5 - 10, 12 - 16, 18 - 22 and 24 - 28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1, 2, 5 - 10, 12 - 16, 18 - 22 and 24 - 28 are pending. Claims 3, 4, 11, 17 and 23 have been cancelled.
2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11/5/07 has been entered.

Claim Objections

3. **Claim 8** is objected to because it is depending on claim 4 which has already been cancelled. For the purpose of the examination, the examiner will assume it is depending on claim 1. Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 2, 5 - 10, 12 - 16, 18 - 22 and 24 - 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujii et al. (US Pat. Application Publication 2004/0014888, hereinafter Fujii) in view of Dowling (US 6,363,475).

6. Regarding **claim 1**, Fujii discloses an in-order multi-threading processor (page 3 paragraph 32, comprising:

a first instruction fetch unit to receive a first thread and a second instruction fetch unit to receive a second thread (fig. 9: 902);

an execution unit to execute said first thread and said second thread in parallel (abstract, fig. 9: 905, page 3 paragraph 33); and

a multi-thread scheduler coupled to said first instruction fetch unit, said second instruction fetch unit, and said execution unit, wherein said multi-thread scheduler is to determine the width of said execution unit (abstract, fig. 9, page 2 paragraph 29, page 3 paragraph 33)

Fujii did not clearly disclose the multi-thread scheduler determines the width of the execution unit. Nevertheless, Dowling inherently discloses a system with multi-thread scheduler determines the width of the execution unit by having a first program and a second program execute concurrently such that the second program executes using resources and cycles that would have been wasted by the first program (abstract and col. 5 lines 53 - 63). It would have been obvious for one of an ordinary skill in the art at the time the invention was made to incorporate Dowling's teaching with Fujii to ensure the available resource are fully utilized when exploit instruction level parallelism to enhance system performance.

7. Regarding **claim 2**, as modified Fujii discloses the multi-thread scheduler unit determines whether the execution unit is to execute the first thread and the second thread in parallel depending on the width of the execution unit (Dowling: abstract, col. 5 lines 53 - 63).

8. Regarding **claim 5**, as modified Fujii discloses the execution unit executes a third thread and a fourth thread in series (Fujii: page 3 paragraph 32. Dowling: col. 7 lines 10 - 20).

9. Regarding **claim 6**, as modified Fujii discloses the first thread and the second thread are compiled to have instruction level parallelism (Fujii: abstract, fig. 9: 905, page 3 paragraph 33. Dowling: abstract, col. 5 lines 53 - 63).

10. Regarding **claim 7**, as modified Fujii discloses a multi-threading processor comprising:
a first instruction decode unit coupled between the first instruction fetch unit and the multi-thread scheduler (Dowling: figs. 2 and 5); and
a second instruction decode unit coupled between the second instruction fetch unit and the multi-thread scheduler (Dowling: figs. 2 and 5).

11. Regarding **claim 8**, as modified Fujii discloses the execution unit executes only two threads in parallel (Dowling: abstract, col. 5 lines 53 - 63).

12. **Claims 9, 10, 12 – 16, 18 – 22 and 24 – 28** are rejected on the same ground as stated in claims 1, 2 and 5 – 8 above.

Response to Arguments

13. Applicant's arguments with respect to claim 1, 2, 5 - 10, 12 - 16, 18 - 22 and 24 - 28 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion


14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lilian Vo whose telephone number is 571-272-3774. The examiner can normally be reached on Thursday 8am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on 571-272-3756. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Lilian Vo
Examiner
Art Unit 2195

lv
December 18, 2007


MENG-AI AN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100